

What is claimed is:

1. A method for analyzing a biological sample comprising the steps of:

(a) obtaining the biological sample from a subject; and

(b) analyzing the sample for the presence of a genetic polymorphism or mutation selected from the group consisting of a cytosine to thymine transition at position 4959 in the *BRCA1* gene (4959C>T), an adenine to guanine transition at position 5217 in the *BRCA1* gene (5217G>A), an adenine to guanine transition at position 1503 in the *BRCA2* gene (1503A>G), an adenine to cytosine transition at position 5996 in the *BRCA2* gene (5996A>C), and an adenine to cytosine transition at position 8688 in the *BRCA2* gene (8688A>C).

2. The method of claim 1, wherein the step (b) of analyzing the sample for the presence of a genetic polymorphism or mutation comprises analyzing the sample for at least two of the genetic polymorphisms or mutations selected from the group consisting of a cytosine to thymine transition at position 4959 in the *BRCA1* gene (4959C>T), an adenine to guanine transition at position 5217 in the *BRCA1* gene (5217G>A), an adenine to guanine transition at position 1503 in the *BRCA2* gene (1503A>G), an adenine to cytosine transition at position 5996 in the *BRCA2* gene (5996A>C), and an adenine to cytosine transition at position 8688 in the *BRCA2* gene (8688A>C).

3. The method of claim 1, further comprising analyzing the sample for the presence of a genetic polymorphism or mutation selected from the group consisting of 676C>A, 943ins10, 1010G>A, 062A>G, 1183A>G, 1186A>G, 1256T>G, 1625del5, 1680G>A, 1742insG, 1832del5, 2577A>G, 3450del5, 3537A>G, 3667A>G, 3719G>C, 3875del4, 3883insA, 3888delG, 3987A>T, 4009C>T, 4160delAG, 4476G>A, 4810T>C, 4932T>C, 5273G>T, 5296del4, 5472G>T, 5501G>T, IVS13+1G>A, IVS16+6T>C, IVS16-20A>G, IVS18+85delT, IVS22+5G>T, IVS22+8T>A, IVS22+8T>C, IVS22+68T>C, 3'UTR+36 C>G from *BCRA1*, and 203G>A, 459T>G, 1342C>A, 1536del4, 2016T>C, 2816insA, 3014T>C, 3034del4, 3188A>T, 4791G>A, 5932G>A, 6575A>G, 6696delTC, 6741C>G, 7245G>C, 7378C>A, 7470A>G, 7697T>C, 7795delCT, and 9862G>C from *BCRA2*.

4. The method of claim 1, wherein the biological sample is a blood or tissue sample.

5. The method of claim 1, wherein the step (b) of analyzing the sample for the presence of the genetic polymorphism or mutation comprises performing a polymerase chain reaction (PCR) step.

5 6. The method of claim 5, wherein the PCR amplifies a nucleic acid comprising the genetic polymorphism or mutation.

7. The method of claim 6, wherein the step (b) of analyzing the sample for the presence of the genetic polymorphism or mutation further comprises determining the nucleotide  
10 sequence of the nucleic acid comprising the genetic polymorphism or mutation.

8. The method of claim 5, wherein the PCR is real time PCR.

9. The method of claim 6, further comprising analyzing the nucleic acid by single-  
15 stranded conformational polymorphism analysis.

10. The method of claim 1, wherein the subject is of African descent.